



# HYGIENETECH

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May 29, 2009

State of California  
Board of Equalization  
450 N Street  
Sacramento, California 94279

Document No. 20905001.2

Attention: David Gau

Regarding: LaCroix Davis Final Report Review

Dear Mr. Gau:

In April of 2009, Hygiene Technologies International, Inc. (HygieneTech) received a copy of the "California State Board of Equalization Building Assessment – Final Report" dated February 25, 2009, which was prepared by LaCroix Davis, LLC (LCD) for their client, the State of California Department of General Services (DGS). As you know, over the past month, HygieneTech has consulted with various members of your team on multiple issues that were described in the LCD report and earlier in May a meeting was arranged so that HygieneTech would have the opportunity to meet with representatives of LCD to discuss the content of their report. That meeting was held on May 20, 2009, and also in attendance were the State of California Board of Equalization, DGS, and BioMax Environmental, LLC (BioMax). Based on the issues that were discussed during that meeting and our review of the LCD report, HygieneTech offers the following comments.

- While the LCD Final Report provided much useful information regarding specific areas of the above-referenced BOE building in which water intrusion has occurred—and in particular those areas in which fungal growth has resulted because of excessive exposure to water, many of which required or still do require attention—that report should not be considered a databank of all findings related to a comprehensive investigation of the entire BOE structure. By their own admission, LCD clearly stated at our recent meeting that they did not conduct a comprehensive water intrusion and fungal growth investigation in the BOE building and, therefore, the LCD report should not be used as a guide in general when making decisions regarding any current or future plans that would involve the physical disturbance of building materials, such as in response to a flood or any other building maintenance needs. HygieneTech has the understanding that the LCD scope of work on this project included conducting a visual investigation at all accessible floor areas and conducting destructive testing at the building core on Floors 11, 22, 23, 24, and in the ceiling above the 11<sup>th</sup> Floor. Be advised, for example, that fungal growth potentials in wall, ceiling, and other cavities were only assessed at a portion of those specific locations cited immediately above, and while the resultant data recorded by LCD on this project may be useful in evaluating growth potentials elsewhere in the building, those data should not be considered representative of all areas of the building. Any party that may under some circumstances use the LCD report as a resource should be advised about the limitations of that document.



- The LCD Final Report did not address the odor issue that has been a common concern on the 21<sup>st</sup> and several other floors. The HygieneTech investigation into the odor complaints, conclusions, and recommendations can be found in HygieneTech Document No. 20903001.1 dated May 4, 2009. In brief, HygieneTech is of the opinion that the most likely source of the odor characteristic of fungal growth involves gypsum board materials at the elevator shaft wall systems and proximate core areas that have had historic exposure to water due to plumbing failures and/or rainwater entering via openings at the elevator shafts, windows, exterior doors, decks, and the roof. Given that the odor noticed at the 21<sup>st</sup> Floor elevator lobby is characteristic of fungal growth and given the fact that LCD clearly noted fungal growth at the upper floor elevator shafts and proximate core areas provides strong evidence that fungal growth is either still occurring at core building locations or that off-gassing compounds resulting from past fungal growth remain in recessed cavities in the core of the building (perhaps being evacuated to the occupied floor areas during movement of the elevator cars).
- LCD provided a general recommendation that confirmed or potential fungal growth in wall or ceiling cavities, which they regarded as “inaccessible areas,” be managed within the framework of a building operations and maintenance (O&M) program in which such confined fungal growth reservoirs are allowed to exist over time. HygieneTech believes that managing such fungal growth in cavity confined spaces is not adequate to control the dispersion of airborne odor-causing compounds, primarily because an O&M program that essentially allows cavity conditions to persist until those cavities are intentionally opened for maintenance reasons, will also allow the insidious evacuation of semi-trapped microbial volatile organic compounds (MVOCs) from those confined spaces over time. Also be advised that any deviation from the strict O&M procedures by any party in the building may result in the unintentional exposures of fungal growth reservoirs and that can and usually does result in exposures to above-background levels of airborne fungal spores. Some of these concerns were addressed regarding the 11<sup>th</sup> Floor in HygieneTech Document No. 20905001.3 dated May 15, 2009. The same concerns may be similarly applied to other parts of the BOE building that have been impacted by past water intrusion events.
- The March 9<sup>th</sup> Floor mechanical leak episode was a fitting example of an improper response to a major uncontrolled water release episode, where portions of gypsum board materials (sheetrock) were removed on nine floors in an attempt to extract water during the drying process. Although the LCD Final Report did not address those specific areas, caution should have been exercised due to the high likelihood of finding fungal growth reservoirs in those areas, based on the information provided in the LCD report. HygieneTech has since received information that in response to the water release episode, cavity-side fungal growth was found in opened walls on seven of the nine floor levels that were involved in remediation at the time.
- Detailed floor-by-floor diagrams should be prepared to depict precisely where known water intrusion has occurred and what building materials were confirmed or suspected to have been adversely affected. The details of these diagrams may be further refined with additional destructive testing and/or wall cavity sampling where such investigative methods have not been employed. And those diagrams should contain information concerning the wall, ceiling, and other building materials that have been replaced or treated due to the discovery of fungal growth.
- HygieneTech recommends that additional wall and ceiling cavity samples be collected at locations where water intrusion is suspected to have occurred in the past or at locations in which growth potentials are simply unknown. Note that, unlike during destructive testing, cavity sampling does not potentially adversely affect the indoor air quality and therefore using those



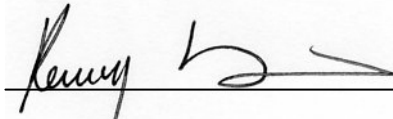
techniques is economical and the data recorded following such surveys is remarkably useful in the floor-by-floor diagrams.

- The BOE building maintenance staff should be properly trained in the appropriate responses to uncontrolled water releases of any amount. Such training should include the above mentioned diagrams so the personnel are familiar with potentially affected building materials where appropriate engineering controls may be necessary during emergency response activities. I recall mutual agreement on this point by all parties that attended the BOE meeting on May 20, 2009.

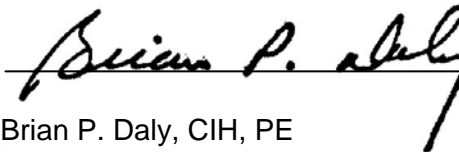
If you have any comments or questions regarding the information contained in this correspondence, please feel free to contact our offices directly at (310) 370-8370.

Sincerely,

**HYGIENE TECHNOLOGIES INTERNATIONAL, INC.**



Kenny K. Hsi, CIH  
Technical Director



Brian P. Daly, CIH, PE  
President